



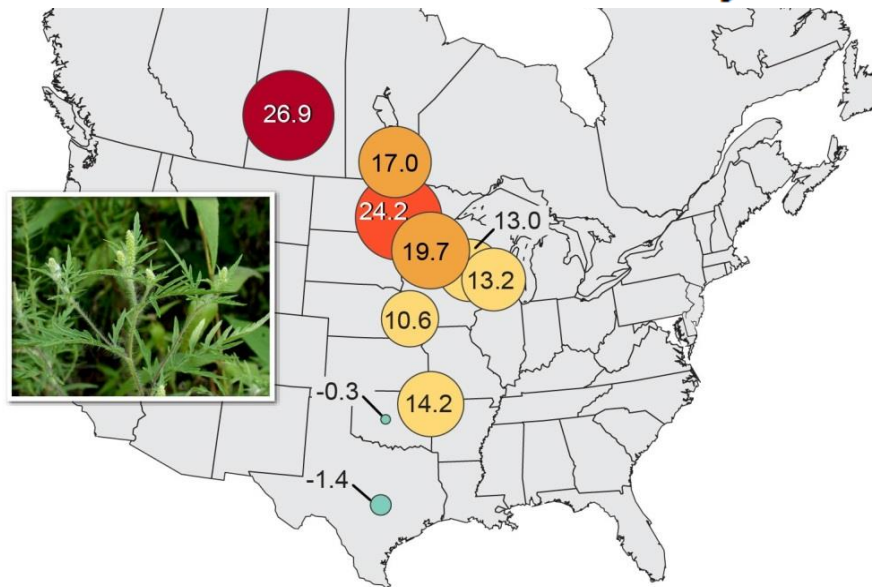
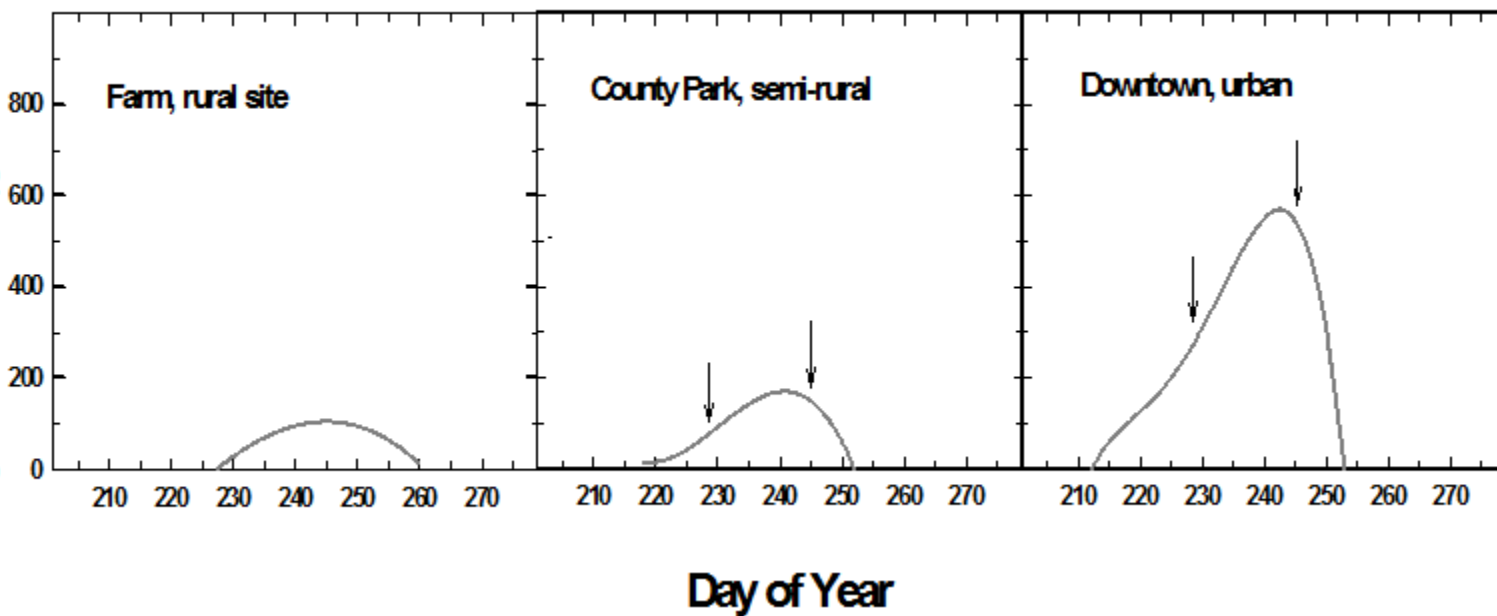
Climate **Action** 2016/**Forum**
*Panel on Climate Change Resilience/ Adaptation:
Health and Agroecosystem*

Climate Change and Allergic Diseases: A Disparity in Risk

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Ragweed Pollen (grains m⁻³)



Change in Ragweed Season Length (Days)

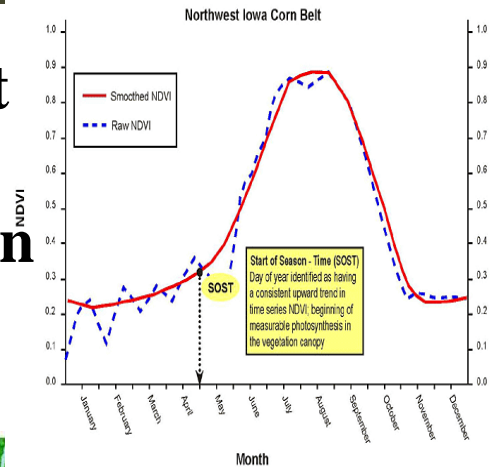


Climate Change and Allergic Diseases: Biological Rationale

Alteration in Plant Phenology and Allergic Rhinitis in the Contiguous US

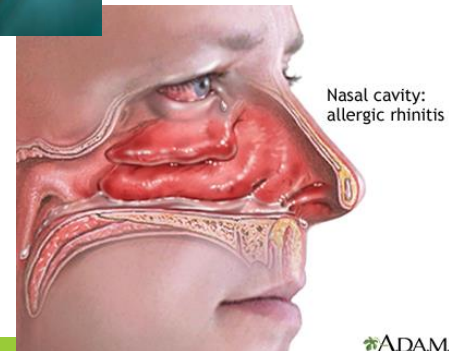


**Start
of
Season**



Roughly 8% of US adults suffer from Hay Fever (17.6 million)

\$12 billion every year on medical expenses for hay fever



Hay Fever & Alteration in Plant Phenology: Results

Changes in Onset of Greening	Un-Adjusted	Adjusted Model
<u>> 3 Weeks Early</u>	1.08[1.01-1.16]	1.13[1.05-1.22]
1-3 Weeks Early	0.96[0.92-1]	0.96[0.92-1.01]
Within 1 Week	Reference	Reference
1-3 Weeks Later	1.06[1-1.12]	1.05[0.99-1.11]
<u>>3 Weeks later</u>	1.05[0.99-1.12]	1.13[1.06-1.21]

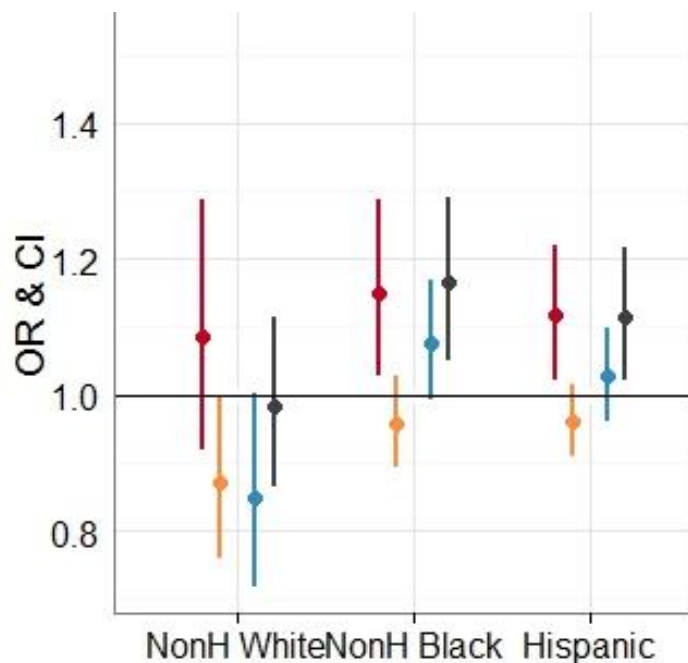
Adjusted for Age, Race, Gender, Education, Insurance, Rural-Urban

Health Data: National Health Interview Survey, 2001-2012, N ~ 425,000

Sapkota et al 2016 (in Prep)

Hay Fever & Phenology: Results

Increases in hay fever by race



Legend: ■ > 21 Days Early ■ 21 to 7 Days Early ■ 7 Days Early to 7 Days Later ■ 7 to 21 Days Later ■ >21 Days later

Exposure to Extreme Heat Event and Risk of Hospitalization for Heart Attack in Maryland (2000-2012)

Characteristic	Cases	Extreme Heat Event
		OR and 95% CI
Overall Model	32,670	1.11 (1.05 – 1.17)
Gender		
Male	18,722	1.12 (1.05 – 1.21)
Female	13,948	1.09 (1.00 – 1.19)
Age		
Age 18-64	14,067	1.10 (1.02 – 1.20)
Age >=65	18,603	1.11 (1.04 – 1.20)
Race		
Non-Hispanic White	22,343	1.09 (1.02 – 1.16)
Non-Hispanic Black	6,730	1.27 (1.12 – 1.44)

Analysis restricted to summer months only

Differences in Risk of Hospitalization for Asthma Related to Extreme Heat Event

County/State	Season	OR (95% Confidence Interval)
Maryland	Summer	1.22 (1.15 – 1.33)
Baltimore City	Summer	1.36 (1.14 – 1.64)
Prince George's County	Summer	1.20 (1.01 – 1.41)
Washington County	Summer	1.76 (1.09 – 2.84)
Wicomico County	Summer	1.22 (0.77 – 1.94)

Summary



Impact of Climate Change on Public Health is real.

Significant variability among race ethnic subgroup as well as location, both at local and national level.

Adaptation strategies must take into consideration such race/ethnic and geographic variability in risk.